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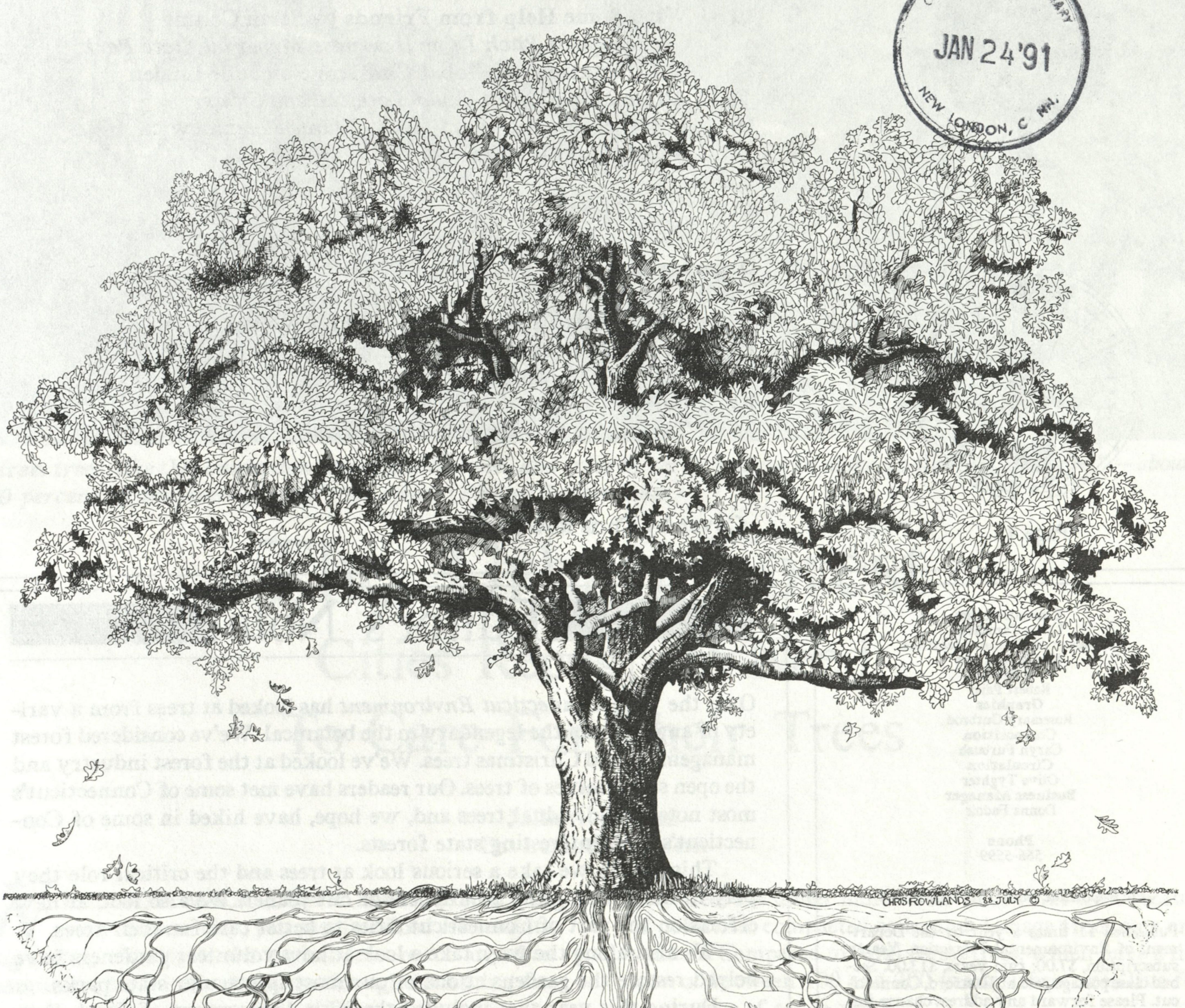

Trees, Cities and the Globe · December 1990

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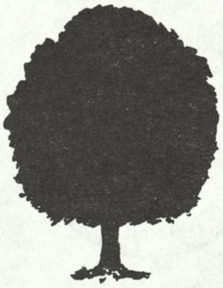
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Editor's Note

Over the years *Connecticut Environment* has looked at trees from a variety of angles, from the legendary to the botanical. We've considered forest management and Christmas trees. We've looked at the forest industry and the open space values of trees. Our readers have met some of Connecticut's most notable individual trees and, we hope, have hiked in some of Connecticut's most interesting state forests.

This month we take a serious look at trees and the critical role they play in maintaining the atmosphere of our planet. We also look at new efforts on the part of Connecticut cities to better care for their trees.

We also, along the way, take a look at how volunteer gardeners have helped restore the gardens at one of our most spectacular state parks.

During this year that included the 20th Anniversary of Earth Day, recognizing the values of resources, natural and cultural, has been a recurring theme. Doing something about the preservation of these resources has been another.

We hope, for all our readers, as this year ends and a new one begins, that you are, in fact, paying more attention to the trees and all the other small things that make up this globe and doing some of the many things that need to be done to ensure their future and our planet's.

Street trees, like this one in downtown Middletown, and trees in yards and parks make up the "urban forest" – about 30 percent of the average town's air space. (Photos: Robert Paier)

The Urban Forest

Cities Recognize Need To Care For Their Trees

by

Julie A. Linden
Environmental Intern

WHEN YOU WALK DOWN MAIN STREET in your town or city, you pass fast-food restaurants, drug stores, schools, all the typical features of an urban community. You're also walking through something else found in every town or city – a forest.

Fred Borman III, urban forester at the DEP's Division of Forestry, chuckled when asked about the term "urban forest." He said it was "kind of a misnomer, but not really," because even in a city "you are dealing with a large green area." He explained that about 30 percent of the air space in an average town is covered by canopy from street trees, trees in residents' yards, and trees in parks. "Even though it's not a continuous stand of trees, urban trees still make up a forest," he said.

Besides the fact that it is more dispersed, an urban forest is quite different from a forest out in the country. City trees are under more stress than rural trees because of pollution, compacted soils, and damage from cars and vandals. Compared to rural forest trees, which have a life span of between 100 and 200 years, urban trees live for an average of seven years.

To compound these problems, most towns and cities in Connecticut have neglected their urban forests, Borman said, because they often do not have a separate budget for trees. Most of the money spent on urban trees goes to crisis management, removal of dead or damaged trees, while little or no money is spent on maintenance, repair, or replanting. A 1989 DEP report stated that only five cities in Connecticut had an inventory of their trees. Every community is supposed to have a tree warden, but because it is a political position, few who are appointed have extensive backgrounds in forestry, Borman said. A 1988

Air pollution, compacted soils, and damage from cars and vandals make life tougher and shorter for the average city tree.

publication entitled *At Home in the Country: The value of Connecticut Forests to Her People,* states, "Combined, the country's urban forests are larger than any of our national forests, yet we tend to take these urban forests for granted."

FRED BORMAN IS HELPING to change this situation. He became the state's first urban forester in 1988 when the position was created to assist communities with forest management. Borman said these days he is getting more and more calls from towns and cities asking for help in planning and managing their urban forests. "A lot of communities are interested in doing the right thing," he said.

"There is definitely more awareness about urban forestry," said Jeffrey Campbell, who was Cooperative Extension educator-in-residence at The University of Connecticut until August this year. He is one of the reasons why. The Cooperative Extension System has cosponsored two annual conferences on urban forestry as well as workshops for tree wardens. Campbell said he was pleased with the enthusiastic response to the Extension System's educational programs. He said at least 12 Connecticut towns are now beginning to manage their urban forests.

Many towns, such as Cheshire, Norwalk, and Essex, have already taken the first step toward tree management by doing or planning inventories of their forests. Inventories are necessary because a town must know what makes up its urban forest -- what kind of trees there are, where they are, and what condition they are in -- before it can begin management. Once a community does begin to manage its forest, maintenance is a key element. "If we only took care of the existing trees better, crisis management work would not be as necessary," Borman said. Upkeep of trees increases their health and longevity and is cost-efficient in the long run because less money is needed for removal and replanting.

Communities interested in managing their trees can look to Middletown as a model. This city was awarded a $25,000 federal grant to develop a management program for its urban forest. It has set up an ad hoc urban forestry advisory board to administer the grant, hired a consultant to do an inventory and management plan, and applied to become a "Tree City U.S.A."

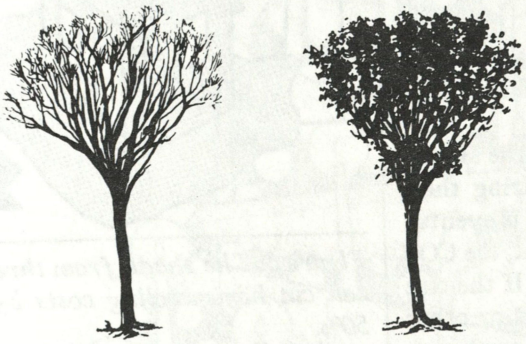
Bruce Spaman, the consultant forester from the Timberline Land Management Company who did the inventory and management plan, characterized Middletown as a typical community in regard to its urban forest. "They're in a depleting situation as far as their street trees go," he said. Like many other cities, it seemed that Middletown was removing trees but not replanting or maintaining them, he said.

Spaman documented almost 3,000 trees in the inventory, noting their condition, size, species, and location. From this information he could calculate the value of each tree. He estimated the total value of Middletown's urban forest at $4 million.

From these statistics, Spaman wrote the management plan, which is to be implemented over the next five years. The plan identifies and prioritizes trees according to their needs, such as fine pruning, standard pruning, safety pruning, or removal. The maintenance work is estimated to cost $100,000 the first year, but should decrease each year as less crisis management is needed and routine tree care takes its place. "You've got to catch up with high-priority work first," Spaman said.

Stan Watson, a licensed arborist and chairman of the urban forest advisory board in Middletown, is enthused about the plan, calling it "comprehensive and well thought out and definitely a good model for other communities." Watson said getting the word out to the public about the plan was important "so that people understand what the program's all about and feel very comfortable supporting it."

A final note to this story is that just as this issue was going to press, the City of Middletown passed landmark ordinances which will go into effect the next budget year. The town has authorized funds to 1) create a permanent urban forestry commission; 2) hire a full-time forester; and 3) adopt a complete and comprehensive urban forestry maangement plan. Stan Watson, who has been a major force in bringing this all to fruition, expressed his pride in Middletown's accomplishment. "This is the first such program in the state of Connecticut. The program is well thought out, advanced, and leaps and bounds beyond any other similar program in the state." Congratulations to the City of Middletown and to all who took part in bringing this program to reality.



A federal grant helped Middletown develop a management program which is a model for communities interested in managing their trees.

A note on Project Learning Tree: If you are a teacher or youth group leader and would like to learn more about the "urban forest" and other environmental and conservation topics, please call Diane Joy, Project Learning Tree coordinator at 566-8108 or 393-2449.

The DEP sponsors Project Learning Tree (PLT) workshops for schools and other organizations. Project Learning Tree is a national environmental and conservation education program for students in kindergarten through high school. Educators attending the PLT workshops receive a free copy of the PLT Activity Guide and useful information for the classroom. As one veteran teacher in Stamford stated: "I consider this to be the most valuable workshop I've attended – informative, well-organized, enthusiastic, terrific." ■

Trees, Cities and Global Warming

by
Stephen H Broderick,
Cooperative Extension
Educator-Forestry, and
David M. Miller,
State Climatologist

What is the Greenhouse Effect?

The greenhouse effect is based on the concept that carbon dioxide (CO2) and other gases with similar atmospheric properties (principally methane, chlorofluorocarbons or CFCs, and nitrous oxides) act like glass on a greenhouse, allowing the sun's energy in but not allowing as much reradiation back into space (Figure 1).

Mankind is adding over five billion tons of CO2 to the atmosphere each year, mostly from the burning of fossil fuels. At the same time our planet's tropical forests are being cut over and burned at the rate of some 27 million acres each year. This burning releases billions of tons of carbon, which was trapped in plant material, into the atmosphere as CO2.

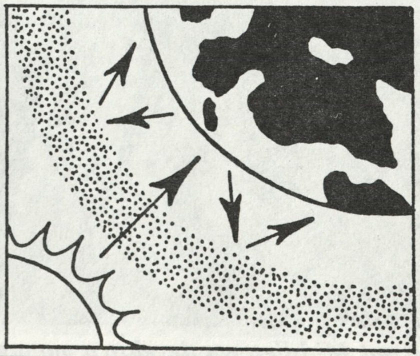


Figure 1: Carbon dioxide and other manmade gasses act like glass on a greenhouse.

Is the Earth Getting Warmer?

Most experts agree that it is. Huge and complex computer programs called Global Climate Models, developed over the last 15 years at four independent research facilities, all predict that major global warming will occur over the next 20 to 70 years. Their warming estimates range from 3 to 4.5 degrees Centigrade, with the greatest warming occuring at the poles. Much less concensus exists, however, over what climatic changes will result or how soon. Continued monitoring and research are needed.

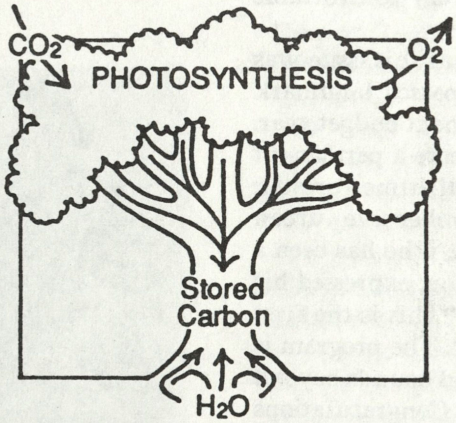


Figure 2: Trees absorb carbon dioxide during photosynthesis and can "lock it up" for decades.

Can Urban Forestry Help Slow Global Warming?

Trees absorb CO2 from the atmosphere and "lock it up" during their lifespans (Figure 2). If a tree is eventually burned or allowed to rot, the CO2 is rereleased for no net gain. If the tree is manufactured into boards or other durable products, however, some carbon is locked up indefinitely. And if huge numbers of trees could be planted simultaneously, significant amounts of carbon would be locked up for decades, buying time for scientists and society to find permanent solutions.

No one person, city or even state can plant enough trees to measurably cool the globe. Accomplishing that will require a massive, worldwide effort involving the people and leaders of many nations.

Our urban and community forestry efforts can contribute, however, in several different ways.

Today's urban centers have been likened to cinders on the landscape, hot spots with average temperatures that can be three to 10 degrees higher than the surrounding countryside. Trees cool the local environment, mitigating the effects of hot temperatures and conserving energy. Research has shown that the shade from three trees properly planted around a home can cut air conditioning costs by 20 percent or more (Figure 3). Trees that protect from winter winds can also cut heating costs. Together, these mitigating effects reduce the amount of fossil fuel that must be burned, the principal source of increases in atmospheric CO2.

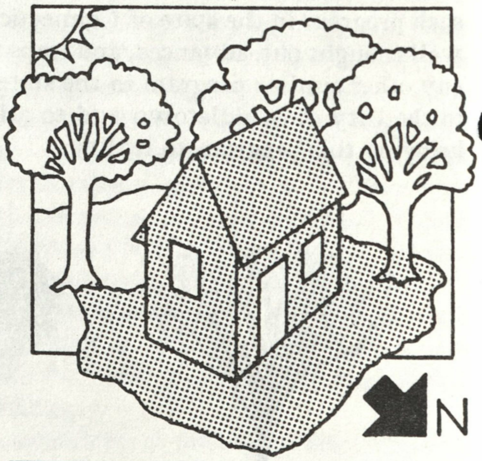


Figure 3: The shade from three trees can cut home cooling costs by up to 50%.

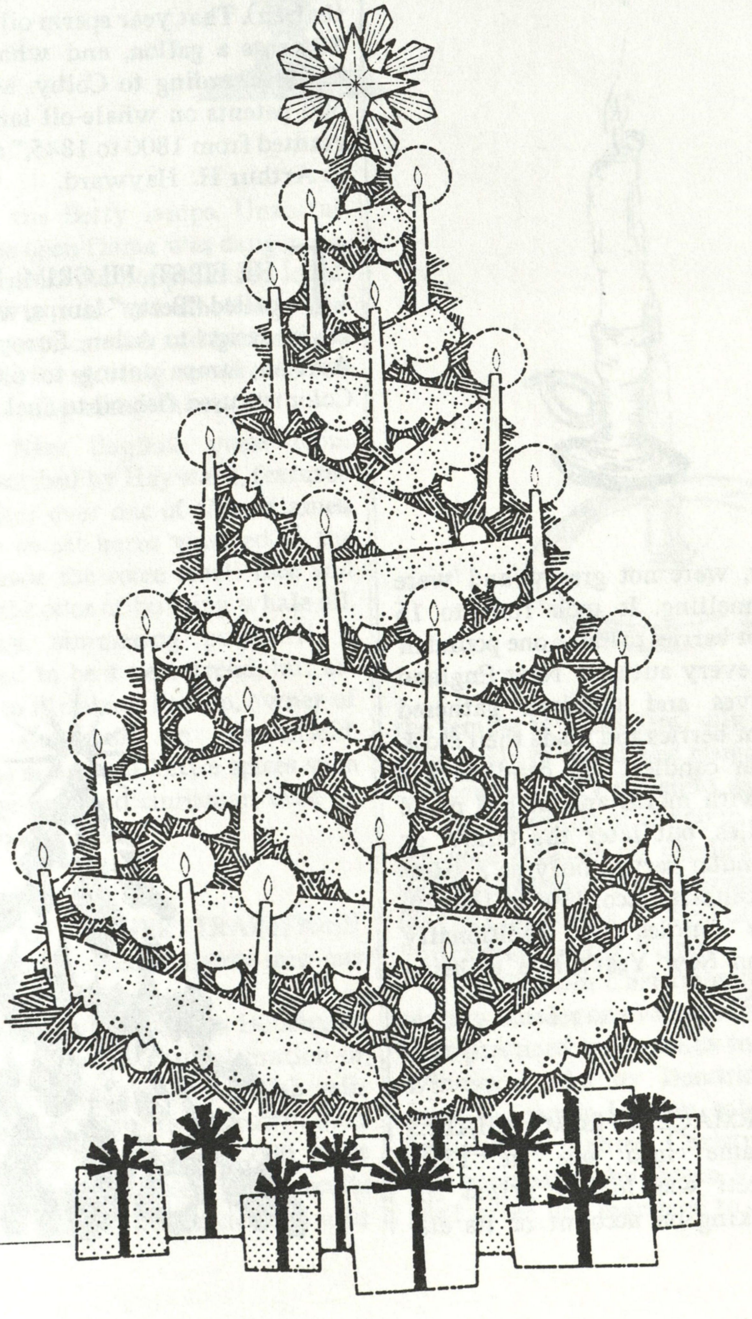
Finally, planting trees and creating a new, healthy urban forest is a positive way of demonstrating concern for the environment we live in, at home in our cities as well as across our globe. ■

Reprinted from Fact Sheet No. 2, October 1989, Urban and Community Forest File; Cooperative Extension System, The University of Connecticut

The Natural Historian

A Season of Lights

by
Jennifer A. Hartmann
Writing Intern
UConn English Dept. and
Connecticut State Museum of
Natural History



TWENTIETH CENTURY Americans can have light at the flip of a switch. This easy access may have dimmed our awareness of the scarcity of light throughout history. Many winter ceremonies have light as an essential element. They are good times to both appreciate the beauty of light and renew our dedication to conservation of energy.

To early humans, light was precious and difficult to obtain; many cultures believed it was divine and often associated it with the gods.

The wood fire was probably the earliest form of man-made light, but people living before Christ used olive oil, nut oil, and animal oil to light early lamps of shells or stones holding floating bits of moss or fiber for wicks.

Ancients used many methods to obtain light. They captured fireflies and their larvae, glow-worms, and put them into perforated gourds or clay containers, creating the earliest lanterns.

Connecticut's Native Americans used pine-knot torches and may have made large ceremonial campfires. In Bolton, there is evidence of a 6,000-year-old campfire, according to Kevin McBride, assistant professor of anthropology at the University of Connecticut. Indians also used "strike-a-lights," iron pyrites which were struck against stone to create a spark.

Early Greeks and Romans used lamps in religious festivals, surrounding their gods with light. The hand-molded clay lamps were dried in the sun or baked in a kiln. The shape usually included a hollow place for the oil, a trough for the wick, and a handle to carry the lamp.

In the Orkney Islands, off the coast of Scotland, natives burned a whole fish as a lamp by putting a wick in its mouth.

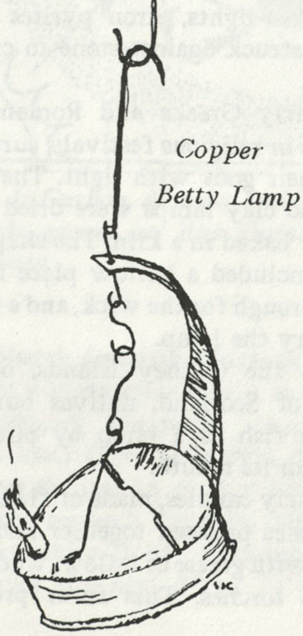
Early candles, made of flax, reeds, or rushes pressed together and saturated with grease or tallow, were similar to torches. This form probably developed into the rushlight, which American Colonists used in a tall, wrought-iron, plier-like holder.

CANDLES such as we have today are a relatively recent invention. Candles made by pouring melted tallow into metal tubes holding a wick date to A.D. 200. Most early candles were of beeswax and tallow.

The ancients believed that bees were divine, and this symbolism was carried over to the use of beeswax candles in early Christian ceremonies.

The church and nobility of Europe used beeswax almost exclusively, while from the Middle Ages until the 19th Century, commoners used less-desirable tallow candles, made of mutton or beef fat.

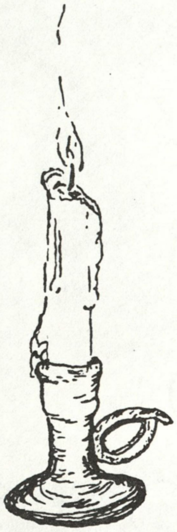
Beeswax candles burned better than the tallow ones, and they were more attractive than oil lamps, so the rich preferred them for secular and religious occasions. King Louis XIV of France would not permit any candle to be relighted, and the ladies-in-waiting of his and other royal courts sold the candle ends of the more expensive wax.



Copper Betty Lamp

In America, the Pilgrims found that candles were scarce and expensive. In 1634, candles cost four pence apiece, and the Colonists could not make many because there were not enough domestic animals to supply the tallow, according to Helen Brigham Hebard.

However, bayberries grew abundantly throughout the Colonies, supplying a natural material for making bayberry candles. These candles would not melt or bend in warm weather, were not greasy, and were sweet smelling. It took four to 15 pounds of berries to make one pound of wax, so every autumn New England housewives and children gathered bushels of berries and made their stock of winter candles. The candlemaker visited with molds and helped make the candles, but later the tallow or wax chandler served only as a salesman of candles, according to Hebard. Bayberry candles are traditionally burned on New Year's Eve to bring good luck.



SPERMACETI FROM WHALES came into use in 1750. "Spermaceti was highly prized for candlemaking on account of its elegant, pearly, translucent appearance and the purity of the light," wrote Hebard.

Spermaceti was just one product of New England's prosperous whaling trade. New London was second only to New Bedford as the greatest whaling port in the world, according to Barnard L. Colby in his article "Whaling from Southeastern Connecticut."

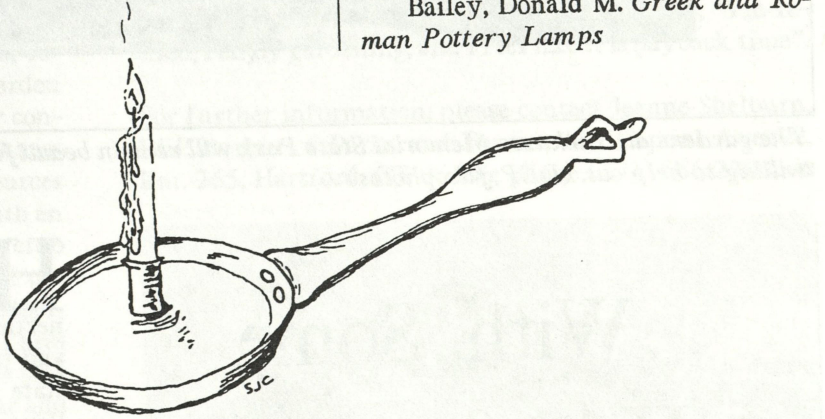
New London's whaling trade reached its peak in 1845 when "21 vessels returned to port with a total of 1,411 barrels of sperm whale oil, 52,576 barrels of right whale oil, and 469,700 pounds of whalebone (baleen). That year sperm oil averaged 88 cents a gallon, and whale oil 33 cents, according to Colby. More than 500 patents on whale-oil lamps were granted from 1800 to 1845," according to Arthur H. Hayward.

THE FIRST PILGRIM LAMPS, called "Betty" lamps, were similar in design to Asian, European, and African lamps dating to 6,000 B.C. Colonists used fish oil to fuel the open

flame in the Betty lamps. Unfortunately, the open flame was dangerous, and the fish oil did not produce a lot of light and it was bad smelling. The open flames of candles and lamps were responsible for starting numerous fires and destroying many homes.

One New England guest room lamp, described by Hayward, featured a tin saucer over one of three flames. Spices or sweet herbs warmed in the saucer made the room smell nice and covered the odor of burning whale oil.

Today, simmering potpourri is considered to be a new trend, but according to Elizabeth Peyton, owner of Peyton Originals in Brookfield, Colonists simmered kettle spices such as orange peel and cinnamon bark on their woodstoves.



MANY OTHER TRADITIONS bring special lights into our lives during the winter.

Hanukkah, the Jewish Holiday of Lights, is an eight-day celebration of the right to practice the Jewish religion, begun with the victory over Greek rulers in Palestine 2,000 years ago. Lighting a candle each day recalls the relighting of the candelabrum in the temple in Jerusalem, when a one-day supply of oil burned miraculously and continuously for eight days.

In the winter of the fifth century, the pope ordered all candles for the year to be blessed. This February 2 holiday is Candlemas, or the Feast of the Purification of the Virgin.

The German Christmas custom of placing candles on evergreen trees was first practiced in America in 1777 in Windsor Locks by Hendrick Rodemore, a former Hessian soldier. The tradition of lighted Christmas trees was popularized by Queen Victoria in 1841 after her marriage to Albert, a German prince.

Advent, the 24 days before Christmas, is often celebrated by placing a wreath of evergreens around five candles — four colored candles lighted each Sunday prior to Christmas and a larger central white candle, which is lighted on December 25.

The Mexican Posadas festival commemorates the birth of Christ, with people going from house to house, singing and holding candles, to symbolize the night when Mary and Joseph went from place to place in search of a room and, finding none, Jesus was born in a stable.

Although we sacrifice the charm (and dangers) of candles on holiday trees for colored bulbs, and the glow of oil lamps for electric lights, winter is a time to celebrate festivals of lights

Suggestions for Further Reading

Bailey, Donald M. *Greek and Roman Pottery Lamps*

Colby, Barnard L. "Whaling from Southeastern Connecticut, 1647-1909," *The Log of Mystic Seaport*

Faude, Wilson H. and Friendland, Joan W. *Connecticut Firsts*

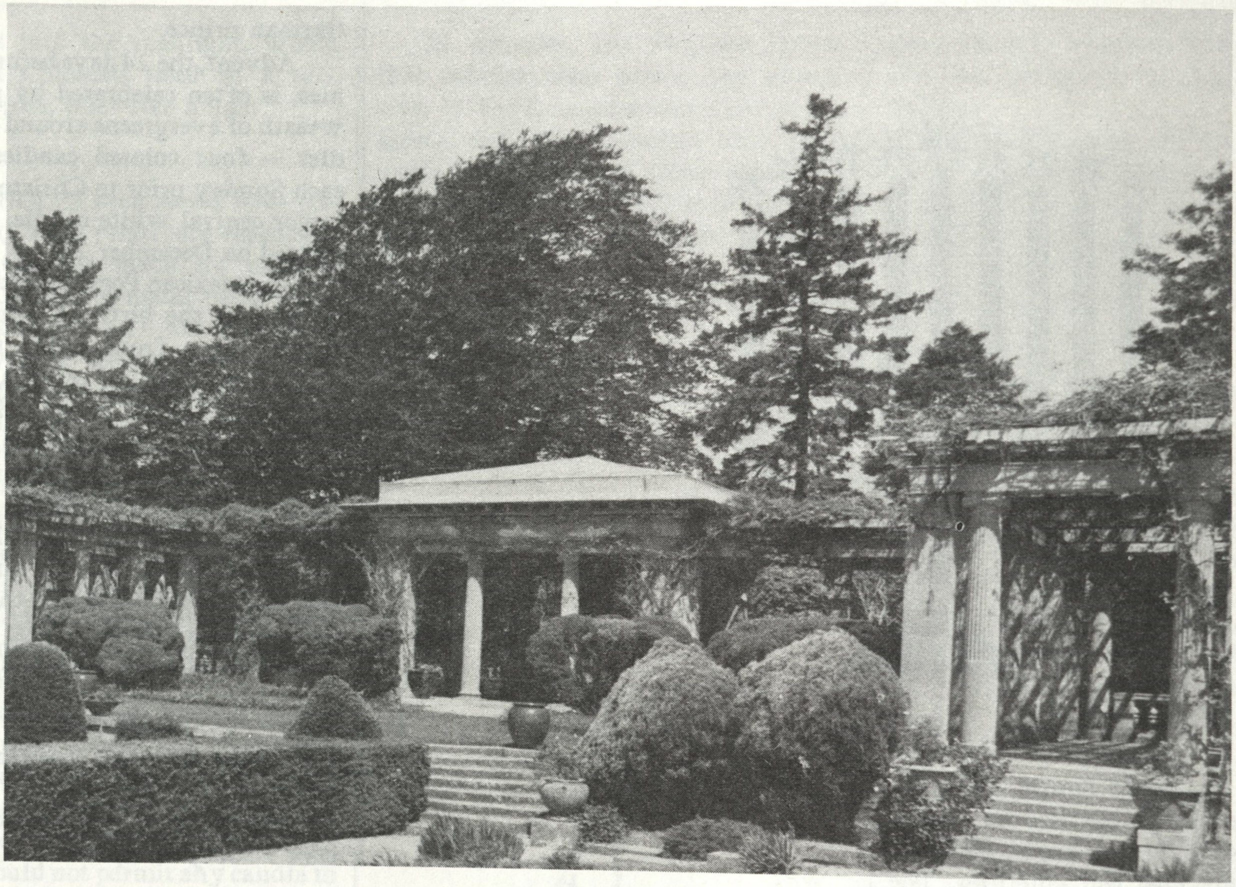
Hayward, Arthur H. *Colonial Lighting*

Hebard, Helen Brigham *Early Lighting in New England: 1620-1861*

Kunerth, William. *A Textbook of Illumination*

Luckiesh, Matthew. *Artifical Light*

O'Dea, William T. *The Social History of Lighting* ■



The gardens at Harkness Memorial State Park will remain beautiful because of the time and commitment of citizens willing to help out. (DEP file photos)

With Some Help from our Friends

by

Sarah Collins

Environmental Intern

HARKNESS MEMORIAL STATE PARK is situated on a breathtakingly beautiful portion of the Connecticut shore. The park is a treasured retreat for many, and throughout its history both private citizens and the state have been committed to preserving it. Located on Route 213 just south of New London, this property was bequeathed to the state by Mary Stillman Harkness. In 1952 it was placed under the jurisdiction of the former state Park and Forest Commission.

According to Mary Harkness' will, the property was to be used for "health purposes." Her initial wish was for the estate to be converted into caretaking facilities for tuberculosis patients. Of course, by the time of her death, tuberculosis had been virtually eradicated. Thus the state became responsible for deciding how to make best use of the property. A subsequent court case ruled that under the terms of the will, portions of the estate could be made into a recreational facility.

In keeping with her life-long commitment to humanitarian projects, Mrs. Harkness had started a summer camp for children with polio in the 1920s. This eventually evolved into Camp Harkness, now run by the Department of Mental Retardation, which occupies one half of the

231-acre estate. It is set aside for the exclusive use of mentally and physically handicapped persons and their attendants. The other half of the estate is open to the public as a state park. Now wide expanses of lawn and picnic grounds replace the 11-hole golf course that stretched between the Harkness mansion and its beachfront.

THE FORMAL GARDENS that surround the mansion are perhaps the most striking and unique aspect of the park. Generally the mansion itself is open to the public during the summer season. Currently the mansion is closed for renovations designed to improve safety and make it handicapped-accessible.

For insurance purposes, the Harkness family kept detailed photographic records of the interior and exterior of their property. The state ultimately plans to restore the buildings and gardens to the original splendor documented by these photographs. The mansion will be restored on a room by room basis, as the state gradually acquires the necessary funds and furnishings. Some pieces of the original furniture are now owned by private individuals who have generously offered to bequeath them back to Harkness Park in their wills. Other furnishings will be replicated.

The restoration of the gardens is also under way, and has been greatly advanced by the help of volunteer gardeners. Three years ago, Jeanne Shelburn, a program specialist with the DEP's Bureau of Parks and Forests, received a letter from members of the Federated Garden Clubs of Southeastern Connecticut expressing their concern over the deterioration of the gardens at Harkness Park. Since the state simply did not have the resources required to upkeep the gardens, Shelburn came up with an innovative idea. She asked the members of the garden club for help. The result of that idea was extraordinary. Currently volunteers from every garden club in the federation have put in a total of over 750 hours at the Harkness gardens. A spirit of cooperation and common purpose was recognized and drawn upon and the result is a cleaner and more beautiful park. And everybody benefits from that.

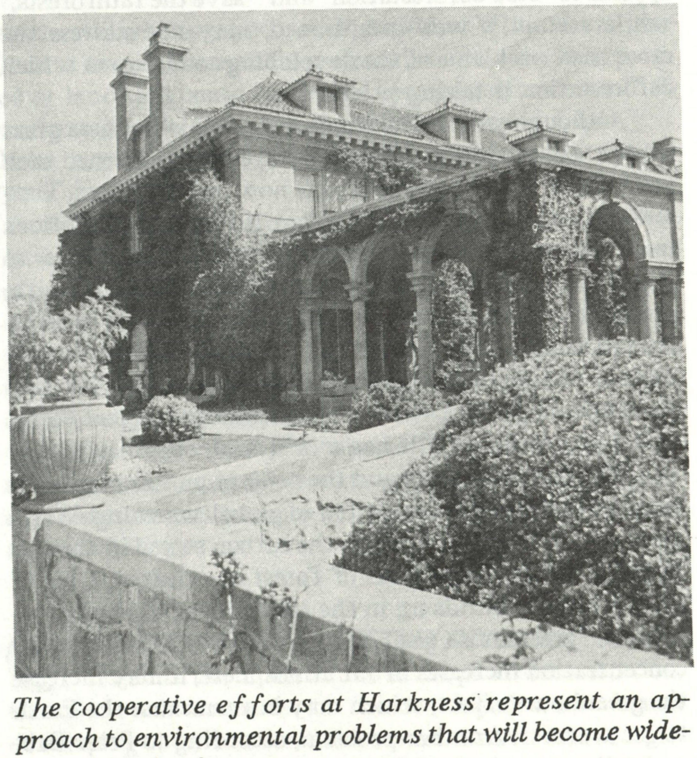
Yet another cooperative project between the state and private citizens was initiated by Linda Callahan, the Harkness staff person responsible for the garden maintenance crew. UConn Cooperative Extension School offers a Master Gardeners program which requires its students to volunteer 60 hours educating other gardeners. In the past students usually fulfilled this by staffing telephones and answering gardening questions from the Cooperative Extension office. A master gardener herself, Linda Callahan presented the program with the option of fulfilling the 60 hours with hands-on experience in the Harkness gardens, working in the beds and assisting less experienced volunteers. According to Jeanne Shelburn, the Bureau of Parks and Forests originally planned to have the volunteer workers help maintain the gardens only after a complete restoration of the garden had been achieved. When presented with this new-found resource of expertise and commitment, Shelburn said they were able to include volunteers in the actual restoration process.

When fully restored, the gardens will replicate original landscape designs that Mary Harkness had commissioned from Beatrix Farrand. Beatrix Farrand was one of the founding members of the American Society of Landscape Architects, as well as its only female member. Her work was widely recognized around the turn of the century and was heavily influenced by the perennial gardens of Italy, France, and England, all fashionable at the time. She was particularly well-known for her striking bed designs and her innovative use of color.

Currently few perennials still remain in the beds. Tess Leary, of the Thames River Garden Club, is a master gardener who is interested in restoring the beds to the original Beatrix Farrand designs. At least once a week she helps plant or maintain the beds, and in the winter months she tends the plants in the park's greenhouse.

Jeanne Shelburn optimistically predicted, "We hope to reopen the mansion and have the gardens restored by the summer of 1992," although as Sy Ginsburg of Waterford says, "Getting a garden *back* into shape is a lot harder than maintaining one." A former resident of Brooklyn, New York, Ginsburg remembers visiting the Harkness estate in his youth and how the magnificence of the grounds first piqued his interest in gardening. "By looking at the beds there, you could get an idea of just how much could be done with even a small border." Sy Ginsburg volunteers at the park because, as he says, "I'm retired, I enjoy gardening, and I feel like it is payback time".

For further information, please contact Jeanne Shelburn, DEP Bureau of Parks and Forests, 165 Captial Avenue, Rm. 265, Hartford, CT 06106; phone (203) 566-2304. ■



The cooperative efforts at Harkness represent an approach to environmental problems that will become widespread in the future.

Deforestation A Global Challenge

by
Julie A. Linden
Environmental Intern

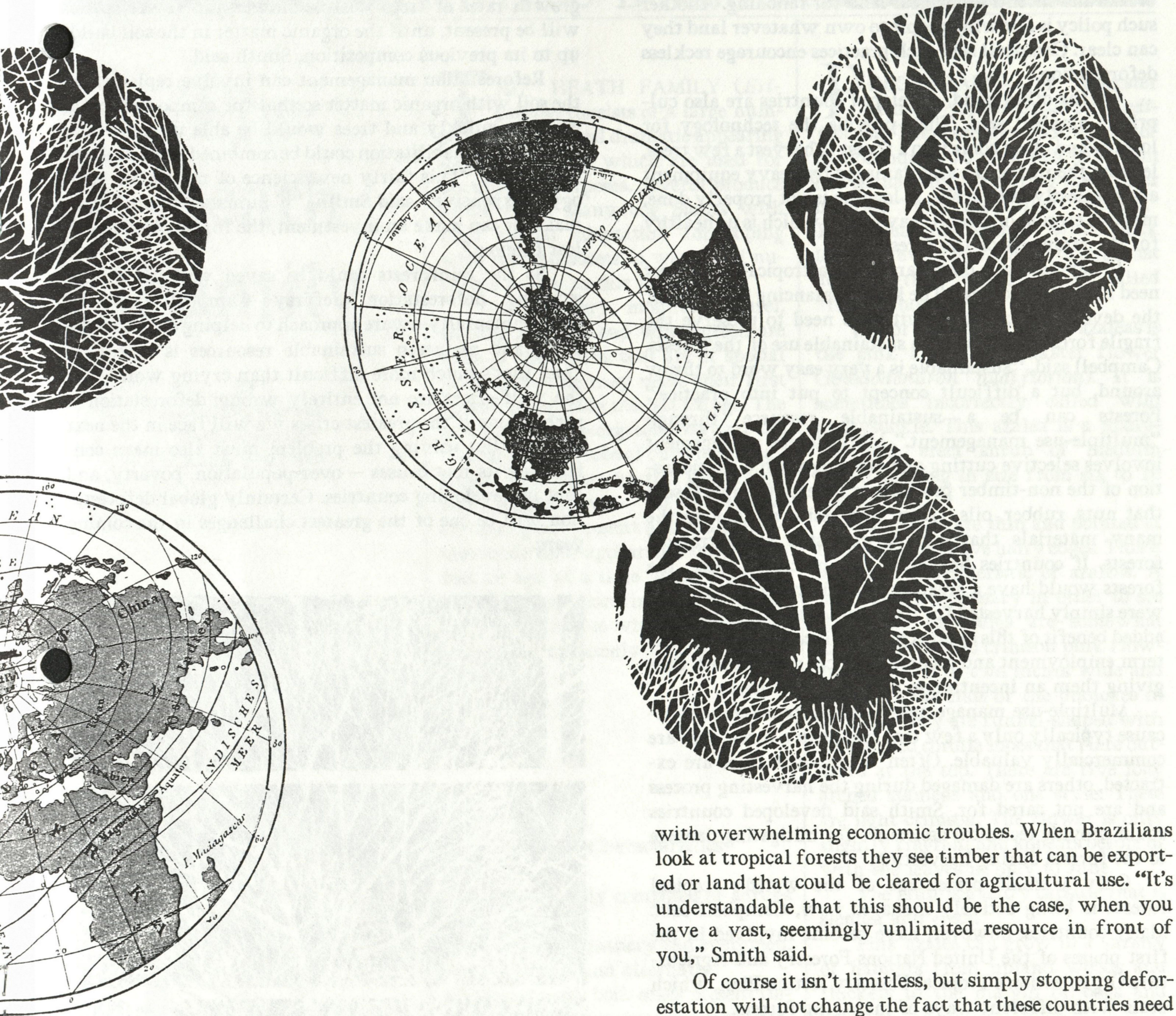
DEFORESTATION IS NOT A NEW PHENOMENON. In the 1800s, vast tracts of forest were destroyed in the United States as people moved west. But only recently has deforestation -- this time occurring in tropical rainforests -- been recognized as a global issue.

Awareness of the massive scale and detrimental effects of tropical rainforest destruction has increased; the situation has seemed to reach a crisis level. Emotional appeals to "stop deforestation" and "save the rainforests," while certainly well-intentioned, may not address the more basic problems of the developing countries in which deforestation is taking place.

Although the scientific consensus is that a great amount of tropical rainforest is cut down or burned each year, there is not agreement on how much is lost. Estimates by various scientific and agricultural organizations in 1988 ranged from 100,000 square kilometers to 200,000 square kilometers lost each year. William Smith, professor of Forestry at Yale University, said it is difficult to maintain an up-to-date global inventory simply because "there is so much landscape to cover." He said there is enough data to show a net loss of tropical forest each year, and that this has world-wide implications.

What has the media and the general public worried is how deforestation is connected to global warming. When trees are cut down or burned, the carbon stored in them is released. When large areas of forest are cleared, a lot of carbon dioxide builds up in the atmosphere. Carbon dioxide is a "greenhouse gas"; some scientists fear that as its concentration increases in our atmosphere, it may increase the greenhouse effect, which may in turn cause the Earth to get warmer. Another problem, according to Peter Babcock, director of the DEP's Division of Forestry, is the possible loss of the forest's function as a "carbon sink," a place where carbon dioxide is actually removed from the atmosphere and trapped.

THERE ARE OTHER REASONS to be concerned about the decimation of the tropical forests. One of the most far-reaching implications is the potential loss of biological diversity. Tropical forest ecosystems are the most diverse in the world, not only in terms of trees, but of other plants, animals, insects and microorganisms, William Smith said, the majority of which have not even been described. Now species are being destroyed before we can discover how valuable they are and how necessary



they may be to the web of life.

Another dimension of this is that many pharmaceuticals used for treating human ailments are derived from tropical plants and animals. It is suspected that many more exist in the rainforests, as yet undiscovered; we could thus be losing more medical resources than we know.

Professor Smith said these biological issues are not the only ones to consider when looking at the rainforest situation. Tropical rainforests are located mostly in the countries of the developing world, and to the poor citizens of these countries, they are a social and economic concern as well. Smith specifically mentioned Brazil, where one third of the world's rainforests are located. It is a nation with overwhelming economic troubles. When Brazilians look at tropical forests they see timber that can be exported or land that could be cleared for agricultural use. "It's understandable that this should be the case, when you have a vast, seemingly unlimited resource in front of you," Smith said.

Of course it isn't limitless, but simply stopping deforestation will not change the fact that these countries need exports to develop and that the people need land for agriculture. Jeffrey Campbell, Cooperative Extension Educator-in-Residence at the University of Connecticut, said, "We can justify saving the forests from theoretical, emotional, or environmental perspectives, but the real question is 'save them for whom?'" Campbell said a balanced, environmentally-aware approach to the causes of deforestation and possible solutions to the problem is necessary.

CLEARCUTTING FORESTS FOR TIMBER or farmland is the main cause of tropical deforestation. Campbell said countries of the developed world blame developing countries for this because of their uneven distribution of wealth and land, over-population, and bad governmental policies. Brazil, for example, gives tax breaks and incentives to clear land for ranching. Another such policy is allowing people to own whatever land they can clear. Campbell said such practices encourage reckless deforestation.

On the other hand, developed countries are also culprits, Campbell said. They provide the technology for logging and often come into a forest to harvest a few trees, leaving the rest of the area damaged by heavy equipment and carelessly built roads. If logging is not properly done, massive erosion of topsoil may result, which is unhealthy for the remnants of the forest.

If harvesting is done carefully, a tropical rainforest need not be lost forever. The key to balancing the needs of the developing countries with the need to preserve the fragile forest systems lies in sustainable use of the forests. Campbell said, "Sustainable is a very easy word to throw around, but a difficult concept to put into practice." Forests can be a sustainable resource through "multiple-use management." Multiple-use management involves selective cutting and clearing with a consideration of the non-timber products of forests. Campbell said that nuts, rubber, oils, fruits, and resins are among the many materials that can be extracted from tropical forests. If countries harvested and processed these, the forests would have a greater economic yield that if they were simply harvested for timber or cleared for land. An added benefit of this approach is that it could provide long term employment and income for local populations, thus giving them an incentive to protect their forests.

Multiple-use management is also a positive plan because typically only a few tree species in a forest area are commercially valuable. Often when these trees are extracted, others are damaged during the harvesting process and are not cared for. Smith said developed countries could provide technical assistance for mitigating damage to the forests during harvesting.

Only a small percentage of the world's tropical forests is being actively managed now, Campbell said. Many countries, however, have become involved in the first phases of the United Nations Forestry and Agriculture Organization's Tropical Forestry Action Plan, which deals with different ways of managing forests.

FORESTS CAN BE MANAGED at different stages -- before and during harvesting, or even after a forest has been destroyed or damaged, William Smith said. "While it's difficult to recapture those magnificent tropical forests because they are such complex systems," he said, "with management of reforestation, you could improve the rate of recovery enormously." Unlike temperate forests in regions such as North America, which are often replanted or grow back by themselves within a few decades after a harvesting, fragile tropical forest systems are slow to regenerate, he said.

After deforestation, soil erodes away and becomes degraded because it loses organic compounds when vegetation is lost. When the soil is poor, it is difficult for the trees to grow back. So for many decades, if not centuries, growth rates of trees will be slower and fewer species will be present, until the organic matter in the soil builds up to its previous composition, Smith said.

Reforestation management can involve replenishing the soil with organic matter so that the compounds build up more quickly and trees would be able to grow back faster. Soil rehabilitation could be combined with replanting efforts. "This fairly new science of restoration ecology is expensive," said Smith, "if humans are willing to make, or can make an investment, the forests need not be lost forever."

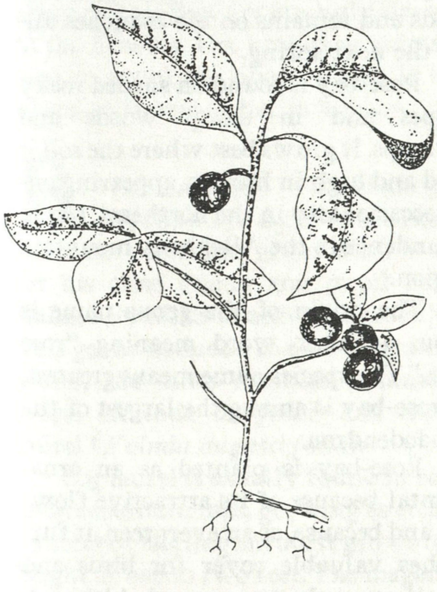
So the rainforests could be saved without simply stopping deforestation. Jeffrey Campbell said an environmentally-aware approach to helping countries develop and maintain sustainable resources is necessary, "and that's much more difficult than crying wolf." But the wolf-criers are not entirely wrong; deforestation is perhaps one of the greatest crises we will face in the next century. But solving the problem must also mean confronting its root causes -- over-population, poverty, and debt in developing countries. Certainly global deforestation will be one of the greatest challenges in the coming years.

■

Trailside Botanizer

The Heath Family

by
Gale W. Carter
Illustrations by
Caryn Furbush



Wintergreen
(Gaultheria procumbens)

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THE HEATH FAMILY (*Ericaceae)* consists of a large number of colorful and dramatic appearing species, many of which are used for ornamental purposes. Several produce edible fruit. Many bog plants with their special adaptation for coping with reduced access to water and nutrients belong to this family.

The blueberry, mountain laurel, trailing arbutus, and wintergreen are some of the heaths that are of special interest because they made their first appearance during the last ice age. The arbutus and wintergreen today are the two smallest shrubs of our present day forest. Two other heaths, the azaleas and rhododendrons -- the crown jewels among our present native shrubs -- also made their appearance during the last ice age, at a time when dramatic changes were occuring. They added color and charm to what had previously been an extremely drab hardwood forest.

General Characteristics

- A group largely composed of shrubs and small trees.
- Leaves often leathery and evergreen, mostly simple and alternate.
- Flowers with both sexes present (bisexual), usually regular or nearly regular (radial symmetry); may be solitary or in panicles or racemes.
- Calyx four or five lobed -- persists after petals fall off.
- Corolla of four or five united petals -- often urn- or funnel-shaped.
- Ovary with two to five chambers may be either superior or inferior; one style and one stigma.
- Stamens twice as many as the lobes of the corolla or, less often, the same number, arising from a disk; anthers usually open by terminal pores.
- Fruit is usually a capsule but may be a berry or drupe.

PINK AZALEA or pinkster flower (*Rhododendron nudiflorum*): There are about 850 species of rhododendron, 70 of which have thin leaves that drop off during the winter months. These are called "azaleas." The remaining species with thick leathery evergreen leaves that persist during the winter are called "rhododendrons."

One of the common wild azaleas is the pink azalea or pinkster flower (*Rhododendron nudiflorum*). It is sometimes incorrectly called wild honeysuckle. This azalea is a many-branched, erect shrub of medium height ranging in size from six to 10 feet.

The leaves are thin and pointed at both ends, and have hairy edges. This is a general characteristic of azaleas. A hand lens is necessary in order to see the hairs. Its twigs are somewhat hairy. The pale to crimson pink flowers are 1 1/2 to two inches wide and appear at the ends of the branches in clusters. They are funnel-shaped with five united corolla lobes that flare outward at the top. There are five long arched stamens and one style. These are light crimson. The flower is only slightly fragrant and appears before or with the leaves in May to June.

The fruit is a hairy capsule that is slender and erect.

Pink azalea can grow in a variety of habitats from upland woods and thickets to the margin of bogs and swamps.

The species name *nudiflorum* is Latin, meaning "naked flower." This is a reference to the flowers that often appear before the leaves have fully unfolded.

Another similar azalea that grows in a wet environment is the clammy or swamp azalea (*Rhododendron viscosum*). This species, unlike the pink azalea, has a fragrant odor. Its flowers are usually white and the flower tube has many sticky reddish hairs that deter crawling insects.

Rhodora (*Rhododendron canadense)* an azalea common to bogs, is a much smaller shrub than either the pink or the swamp azalea. It is usually only 1 to 3 feet high and has a flower that is light purple, narrowly lobed and not fragrant.

HIGH BUSH BLUEBERRY (*Vaccinium corymbosum*) grows as a medium to tall, many-branched shrub. It forms in clumps that may be open or compact. The leaves are simple and alternate and are generally toothless. They are green above but lighter colored beneath.

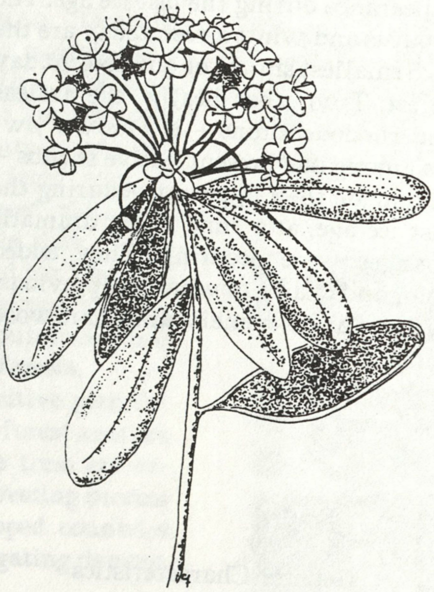
The flowers are small, white or sometimes faintly pink, and bell-like, and are borne on drooping racemes. They appear in small clusters with only a few flowers about the same time the leaves begin to unfold. These flowers may often be overlooked because one needs to observe the flower at close range in order to become aware of its delicate beauty. The flowering time is from May to June. Its fruit is a small bluish to black berry with many unarmored seeds, appearing from June to September.

Blueberries prefer moist, slightly acidic soil along the margins of swamps and bogs, but may also grow in meadows and open woodlands.

The genus name *Vaccinium* is Latin for "cow," but the connection between blueberry and cow is not known. The species name describes the flat-topped flower (a corymb) and cluster of berries.

Blueberries are eaten by many animals, particularly songbirds. They are the preferred food of the tufted titmouse, brown thrasher, gray catbird, and rufous-sided towhee. They are also used by some birds for nesting and cover.

Many people confuse blueberries and huckleberries because their leaves are similar in shape and color, but huckleberry leaves have resinous dots on at least one side of their leaves – usually the under surface. A hand lens is needed to see this. They also have berries with 10 seed-like nutlets with a stony covering. Blueberry has many unarmored small seeds.



Labrador Tea

(Ledum groenlandicua)

ROSE-BAY or Great Laure (*Rhododendron maximum*) grows as an evergreen shrub or sometimes as a small tree that may reach a heigh of 40 feet and a diameter of up to a foot. It often forms dense thickets as its own branches intertwine or interlock with other plants growing near it.

It has large thick leathery leaves that are simple and alternate. They are pointed at each end and may be as much as 12 inches long and 2 1/2 inches wide, being thickest in the middle.

The large showy white or pink flowers have five lobes that give them a bell-like appearance. The upper lobes are marked with colored spots often green. There are 10 stamens with anthers that open at the end by a round pore. The flower stalk has sticky glandular hairs to discourage crawling insects from getting to the flower. Flowers appear at the ends of the branchlets in clusters of 10 to 30 during June to July. The nectar is poisonous. Small children have been poisoned by sucking the flower.

The flower forms in the fall as a slender capsule with glandular hairs. It splits into five sections to release its seeds and remains on the branches until the next spring.

Rose-bay is found on shaded rocky slopes and in damp woods and swamps. It grows best where the soil is acid and high in humus, appearing only occasionally in the northeast, but in abundance in the Allegheny mountain region.

The origin of the genus name is from a Greek word meaning "rose tree." The species name means greatest, as rose-bay is among the largest of the rhododendron.

Rose-bay is planted as an ornamental because of its attractive flowers and because, as an evergreen, it furnishes valuable cover for birds and small game the year round. Although the foliage is poisonous, it is browsed by white-tailed deer without apparent harm.

The wood has value as fuel, for tool handles, and for bowls of briar pipes.

LABRADOR TEA (*Ledum groenlandicua*) grows as a dominant, low-growing shrub in many northern bogs. It is also found farther south but its presence there is more scattered. It grows up to a height of about four feet, but is usually about three feet. This evergreen shrub forms thickets near the boundary line between peat bogs and drier land.

The twigs of Labrador tea form buds in early June and the following year produce handsome white flowers which appear as terminal clusters. The flowers range in size from one third to one half inch wide. This is followed by the appearance of fruit which is in the form of a five-parted capsule growing on an incurved stem.

The stems of Labrador tea are densely hairy and the leaves are narrow and waxy beneath, white when young and brown on the older leaves. The edges of the leaves are inrolled.

Early settlers used the leaves as a substitute for tea. It was referred to as "muskeg tea," or "St. James tea," or "Hudson Bay tea."

The leaves placed among clothing were believed to be useful in discouraging moths. Bees are strongly drawn to the flowers, but browsing animals tend to avoid the plant which is believed to be somewhat poisonous.

BOG LAUREL (*Kalmia polifolia*): The noted taxonomist Linnaeus names the genus *Kalmia* after his close friend and pupil Peter Kalm, a Swedish botanist and traveler. This genus includes, in addition to bog laurel, the more familiar mountain laurel (*Kalmia latifolia*) and sheep laurel (*Kalmia augustifolia*).

Bog laurel is usually found in bogs or on mountain tops, growing as either an erect or trailing shrub. It grows to a height of one to two feet. The magenta flowers of bog laurel blossom from May to July. They are from one half to three fourths inch wide and appear at the tips of the stems in rather sparse clusters. Sheep laurel has a similar flower but it blooms along the leaf axils.

Bog Rosemary

(Andromeda glaucophylla)

Its flower, like that of mountain laurel and sheep laurel, has a remarkable adaptation for cross-pollination. The petals are wheel-like and fused with 10 pits for holding each of its stamens. The pollen is scattered when the stamens are touched by a bee.

The leaves of bog laurel are narrow and evergreen. Their white undersides are rolled in to conserve on moisture. Its twigs are two-edged.

Grazing, domesticated animals have been poisoned by eating the leaves of bog laurel, but this is usually not a problem because it usually grows on inaccessible sites. Deer do not appear to be affected by browsing its leaves.

BOG ROSEMARY (*Andromeda glaucophylla*): The name *Andromeda* comes from a Greek mythological name for a maiden who supposedly was chained to a rock in the sea surrounded by serpents and dragons. In a similar way, the bog rosemary is fixed on hummocks in the bog never to be rescued, because it is only adapted to life in a wet, harsh environment.

Bog rosemary is a low growing bog shrub with a creeping base and curving, erect stems with few branches. It reaches a height of up to about two feet.

The flowers of bog rosemary take two years to develop. Flower buds form during mid-summer the previous season from blossoming time, but are not ready to flower until the following spring. The pink or white blossoms are on drooping bell-like terminal clusters. They appear from May to July. The fruit is a turban-shaped capsule.

The leaves of bog rosemary are leathery and often narrow with dense, fine white hairs on the under surface. The edges of the leaf often inroll to completely cover these hairs. Its leaves are quite similar to those of bog laurel, but blue-green rather than green. The species name *glaucophylla* means "with blue leaves". Pale laurel has opposite leaves, while bog rosemary's leaves are alternate. ■

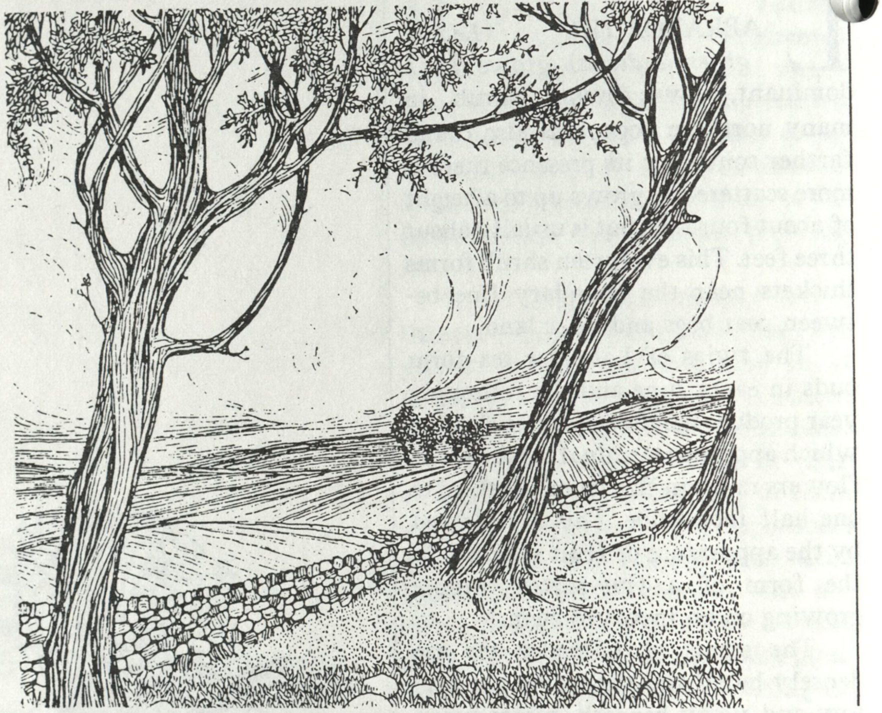
Map of the Month

The Open Space Tool

by

Alan Levere

Senior Environmental Analyst



WHEN YOU LOOK UP the word "map" in the dictionary, you will not find it defined or described as, or even considered to be a synonym for the word "tool." The two words do not generally appear together. This is a surprise to me because the map that we have to offer this month is in fact a major tool for use in the field of Connecticut's land preservation efforts. Here's why.

The DEP recently released the *Open Space Map of Connecticut*, which really is a two-map set. The information was compiled to graphically depict all the dedicated open space in Connecticut.

The full-color maps make it easy to see exactly which areas are dedicated open space and which organization has preserved that space. For instance, all Federal property is red, the state property shown is green, and municipal property shown is orange. An explanation lists some of the different types of land included in each category. This helps the viewer to understand the sometimes complex geographic pattern of Federal, state, municipal, and private open space land ownership.

The maps show how open space owned by different organizations combines to protect specific areas. For example, a corridor of open space protecting the Appalachian Trail consists of open space land under Federal, state, and private ownership. The first map, entitled *Open Space Map of Connecticut*, depicts the currently existing dedicated open space of the state -- that is, the open space permanently dedicated and which will always remain as open space. This includes all *Federal* properties such as Appalachian Trail and wildlife refuges, *state* DEP owned lands such as forests and parks, and *municipal* properties which include parks and recreation areas. Again, by color you are able to see which organization is responsible for which land.

The second map, which is entitled *Open Space Map of Connecticut and Selected Undeveloped Land*, differs from the first by including all of the land on the first map as well as two other categories: "Water Company Owned Lands" and "Other Large Private Holdings," These two categories are actually lands managed as, but *not* designated as, open space. The visual comparison of dedicated open space to non-dedicated open space (which was the main objective of the map project) stands out dramatically.

It becomes immediately obvious that many of the thousands of acres that are currently open space are not locked into this use, and thus, may be developed for other uses. The point here is that the two types of land are currently entwined as a single use of open space. They combine to form an entity more valuable than either of the pieces. But it now becomes clear that some of the open space may not always remain as such.

This unprotected land helps to form the base for many of our riverine, wildlife, and hiking/recreation corridors, as well as the drainage areas that shed much of the clean water into many of the state's surface water reservoirs.

Certainly much water company owned land will be preserved since it is tied to their production of clean water. However, many thousands of acres are in private holdings, and water companies do sell off property from time to time.

What then is the connection between the words "map" and "tool"? Well, this map, by virtue of its land ownership contrasts, becomes a planning tool for Federal, state, and municipal land acquisitions in the future. As this map set clearly indicates, much work remains to be done to protect many of the state's riverways and open space corridors. Thus, the most advantageous use of increasingly scarce funds is a more directed land purchasing program.

In full color, each map measures about 44" by 55." They are available flat (rolled) or folded. $15.00 for the set.

To order, please include state sales tax of eight percent and $2.00 for handling per order, (not per item). Our address is: DEP-NRC, Map Sales, Room 555, 165 Capitol Avenue, Hartford, CT 06106. ■

Environmental Summary Legislation

by

Elaine Korenkiewicz
Legislative Coordinator
and
Michael Sullivan
Executive Assistant

(The following is a summary of environmental legislation passed in the 1990 session of the Connecticut General Assembly. This is the third and final installment in the the series.)

VI. HAZARDOUS MATERIALS

1) PA 90-307 An Act Concerning Freedom of Information Requests Under the State's Hazardous Waste Program

Under the federal Resource Conservation and Recovery Act (RCRA), no state's hazardous waste program can be authorized by EPA unless the program provides for public availability of information. This information must be available to the public in substantially the same manner as under the federal Freedom of Information Act. The act allows the state Freedom of Information Commission only 60 days to act on an appeal from a DEP denial of a request for hazardous waste-related records.

Effective Date: On passage.

2) PA 90-165 AAC Hazardous Waste Generator Tax

This act extends the tax on hazardous waste generators and hazardous waste treatment facilities for two more years, until 1992.

Effective Date: On passage.

3) PA 90-276 AAC Notification of Chemical Spills

Under this act, DEP must notify the chief executive officer and the local director of health whenever there is a discharge, spill, or uncontrolled loss of oil, petroleum, chemical liquid, or hazardous waste.

Effective Date: October 1, 1990.

VI. AIR QUALITY

1) P.A. 90-247 AAC Control of Air Pollution and Remedial Orders and Issuance of Air Pollution Control Permits

Testing. This act authorizes DEP to issue orders requiring the investigation of air pollution sources by monitoring, production of records, and other means. DEP may issue an order when an investigation, test data, or other credible information provide reasonable cause to believe a violation of an air pollution law, regulation, order, or permit has occurred or is about to occur.

Penalties. The act increases the maximum civil penalty for violations of air pollution laws, regulations, and orders from $1,000 to $25,000. The act establishes a maximum criminal penalty for wilful or criminally negligent violations of $25,000 per day, up to one year's imprisonment, or both. Subsequent convictions could involve up to $50,000 in penalties, two years imprisonment, or both. Finally, the act also establishes a penalty of $10,000, imprisonment for six months, or both, for knowing false statements in air pollution applications, reports or other documents, or for tampering with required monitoring devices or methods.

Orders. Current law allows DEP to issue orders for violations of regulations or permits. This act expands this authority to cover violations of any air pollution law or order.

Open Burning Permits. This act exempts brush burning permits from the requirements of last year's law, PA 89-225. Under existing law, DEP can issue an air permit only after considering an applicant's compliance with all federal and state environmental laws, as well as considering all sources of air pollution on the property where the activity requiring the permit is located.

Effective Date: October 1, 1990.

2) P.A. 90-150 AA Implementing the Recommendations of the Program Review and Investigations Committee

Automatic Referral. This act requires DEP to request the Attorney General's office to take action against any person failing to comply with an air pollution order within six months.

Emission Tests. The act requires DEP to order an emission test of an air pollution source, at its expense, if DEP finds a violation of a regulation.

Revocation/Suspension. The act allows DEP to modify, revoke, or suspend air permits in certain circumstances. These factors include violation of a statute, regulation, permit or order; unauthorized alteration of sources; determination by DEP that the source endangers public health, safety, or welfare, or the environment; or any misrepresentation of facts by the permit holder.

DEP Annual Report. The act requires DEP to develop an internal performance evaluation program for planning and monitoring air programs. Beginning January 1, 1991, DEP must report to the Environment Committee and the Program Review and Investigations Committee annually on the Air Management Bureau's progress.

Effective Date: October 1, 1990.

3) P.A. 90-219 AAC Global Warming

This act contains a wide assortment of proposals and programs to improve energy conservation and efficiency, enhance mass transit, and increase tree planting.

Tree Planting. The act allows DEP to require applicants for an air discharge permit to provide for tree or turf grass planting to offset carbon dioxide emissions.

Mass Transit. The act provides staff for the Connecticut Public Transportation Commission to create an independent mass transit advocate.

Parking Garages. This act removes the ability of municipalities to give tax breaks for multi-level parking facilities.

State Facilities. The act requires that existing energy performance standards for state buildings must provide that the average energy use per square foot be reduced, from the 1990 level, 15 percent by the year 1995, 30 percent by 2000, and 50 percent by 2010.

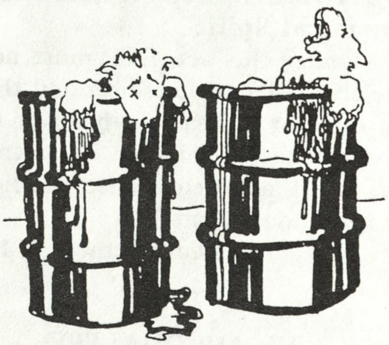
Technical Advisory Group. OPM shall establish a technical advisory group to recommend electric energy efficiency standards for new and substantially renovated buildings.

Comprehensive Energy Plan. OPM will prepare an energy plan for implementation on January 1, 1994. This plan must assess current energy supplies and propose a strategy for decreasing the use of fossil fuels and promoting home energy efficiency.

Motor Vehicles. The Standardization Committee must consider vehicles using alternative fuels when purchasing new vehicles. The act requires that newly purchased state cars and light trucks shall have a gas mileage of at least 29 mpg for cars and 24 mpg for light trucks by 1993; 38 mpg and 30 mpg respectively by 1997; and 45 mpg and 35 mpg respectively by 2000.

Telecommuting. OPM shall study the state's ability to use telecommuting and report to the Environment Committee by January 1, 1991.

Effective Date: October 1, 1990.



VIII. WILDLIFE

1) PA 90-322 – AAC Harassment of Hunters

Definition. This act prohibits anyone from obstructing or interfering with someone who is legally hunting, fishing, trapping, or otherwise taking wildlife. Obstruction or interference is defined as:

1) Driving or disturbing wildlife to intentionally disrupt someone who is engaged in the process of lawfully taking wildlife;

2) Blocking, impeding, or harassing;

3) Using natural or artificial olfactory or physical stimuli to affect wildlife behavior;

4) Erecting barriers to prevent access into or out of areas where the lawful taking of wildlife may occur;

5) Moving into a hunter's line of fire;

6) Affecting personal or public property intended for use in the lawful taking of wildlife in a way that limits or prevents its use; or

7) Entering or remaining on private land without permission while intending to violate this law.

Penalties. Conviction for any violations will be a class C misdemeanor, punishable by imprisonment of up to three months, a fine of up to $500, or both.

Effective Date: October 1, 1990.

2) PA 90-167 – AAC Deer Damage Permits

This act is designed to improve the efficiency of the deer damage permit system and eliminate the improper use of such permits.

"Farmer" Status. This act increases from $500 to $2,500 the gross income value from the commercial cultivated production of crops a person must have to qualify for deer damage permits.

Applications. This act allows permit applications to be signed by all landowners or by the landowner lessee to whom a farmer tax exemption permit has been issued.

Permit Duration. This act restricts the use of deer damage permits to January through October 31 instead of December 31 of each year.

Prior Convictions. A person cannot obtain a damage permit if such person has been convicted for any deer related violation within three years preceding the date of application.

Jacklighting. The use of jacklights under these permits is restricted to instances where damage cannot be reduced during the daylight hours between sunrise and one-half hour after sunset.

Out-of-State Deer. No person may have in their possession any deer from any other state or country unless it is properly tagged.

Effective Date: October 1, 1990.

3) PA 90-166 AAC Surplus Hatchery Products, Migratory Game Birds, the Disclosure of Stocking Schedules, and the Trapping of Birds.

This act makes several changes in the state's fish and wildlife laws to allow for the more efficient management of wildlife.

Surplus Hatchery Products. This act allows DEP to sell surplus, disease-free hatchery products, including Atlantic salmon brood stock, to commercial hatcheries.

Migratory Game Birds. This act allows the state to address concerns for migratory birds which are not abundant in Connecticut or are on the periphery of their range, and therefore require more restrictive management measures than provided by federal regulations.

Stocking Schedules. This act allows DEP to withhold public disclosure of the date and location of the stocking or release of fish or game animals.

Trapping of Birds. This act allows DEP to require permits from individuals authorized by the U.S. Fish and Wildlife Service to trap birds for banding.

Effective Date. This act will take effect on passage, except the provisions on surplus hatchery products, migratory game birds, and trapping of birds will take effect October 1, 1990.

4) PA 90-274 AAC Pilotage on the Waters of Long Island Sound, the Taking and Possession of Lobsters in the State, and the Deployment of Floating Boom Retention Devices in Connection with Transferring of Petroleum Products.

Pilotage on Long Island Sound. The act requires possession of a federal masters license as a prerequisite for a Connecticut pilot license. The act also increases the amount of the performance bond which a pilot must post from $500 to $1,000; allows Conn DOT to set pilotage rates for the Connecticut waters of Long Island Sound; and eliminates the minimum nine-foot draft for foreign and American vessels subject to pilotage requirements.

Boating Education/Certification Program. Sections 7 to 9 of this act amends Public Act 89-388 regarding the Boating Education/Certification Program by:

1) changing the requirement date from January 1, 1991, to January 1, 1992 for persons who will need to obtain a certificate of boating operation before operating a vessel;

2) exempting persons operating a motor boat less than 25 horse power or a sailboat less than 19.5 feet from having to obtain a certificate of boating operation;

3) changing the date from January 1, 1991, to January 1, 1992, for persons to provide proof of eligibility for obtaining a certificate of boating operation.

4) allowing persons to take an equivalency exam beginning January 1, 1992, through September 30, 1993;

5) requiring persons, beginning October 1, 1993, and thereafter, to successfully complete a course in boating safety before obtaining a certificate; and

6) requiring persons under 18 years of age opearting a motorboat with 10 horse power, or a sailboat which is more than 19.5 feet, to have a certificate.

Possession of Lobsters. The DEP may regulate the possession of lobsters in the state regardless of where taken.

Boom Retention Devices. Each tank ship or barge transferring oil or petroleum liquids shall be protected by a floating boom retention device enclosing the vessel. This device shall be deployed at sufficient distance to contain any spill, except when weather or sea conditions prevent the boom from being deployed safely.

Effective Date. On passage, except the provisions on pilotage, possession of lobsters, and boom devices will take effect October 1, 1990.

IX. *OPEN SPACE*

1) SA 90-21 – AA Establishing the Connecticut River Preservation Task Force

District. The act establishes a Connecticut River Preservation District, consisting of 13 towns, between Enfield and Portland. The act also creates a Task Force to formulate strategies to preserve prime agricultural farmland along the river.

Report. The Task Force shall design a conservation plan for the District, including measures such as land use controls, land acquisition, tax incentives, land banks, easements, and long-term installment payment options under the state farmland development rights purchase program.

Effective Date: October 1, 1990.

2) PA 90-239 – AAC Open Space Land

Fees in Lieu of Open Space. Under current law, local planning commissions may adopt regulations requiring subdivision applicants to provide open space as part of their subdivision plan. This act would allow a local commission to require applicants to pay a fee, or a combination of land and a fee, to the town instead of providing open space.

Affordable Housing. Under this act, the open space requirements of section 8-25 shall not apply if the subdivision contains affordable housing equal to 20 percent or more of the total housing to be constructed in such subdivision.

Grants-in-Aid. Under the Recreation and Heritage Trust program, DEP provides grants to municipalities for open space and recreation.

Effective Date: October 1, 1990.

3) PA 90-292 – AAC Review of Water Company Land Permit Applications and Prohibiting the Operation or Maintenance of Aircraft on Reservoirs and Watercourse Tributaries of Reservoirs

Review of Land Change. Under current law, DOHS may refer an application for a proposed sale, lease, assignment, or change in use of Class II land to a professional review team if DOHS believes the proposal may have an adverse impact on water supply. Under this act, DOHS may refer the application instead to a consultant chosen by the commissioner for review.

Recreational Activities. DOHS may refer this type of permit application to a qualified consultant for review if DOHS believes the proposed activity may have an adverse impact on the water supply.

Aircraft. No person shall cause or allow an aircraft to land on, take off from, or be stored at any distribution or storage reservoir, or any watercourse tributary to these reservoirs.

Effective Date: October 1, 1990. ■

The Bulletin Board

1991 DEP Calendar

The 1991 DEP Calendar is now available! It is our first ever, and we feel it has all the makings of an important educational item. A different two-tone photograph or drawing heads up each month, and more than 12 dozen entries mark a variety of anniversaries and dates including the 20th anniversary of the DEP, the creation of our first state park, the day eight inches of hail fell on East Canaan, the return of redwing blackbirds to the wetlands, the shad run in the Connecticut River, and many, many more.

The calendar includes a phone guide to all major units of the DEP. $4.25.

To order please include $1.00 Postage and handling and 8 percent state tax and send to:

DEP Calendar
Room 553
165 Capitol Avenue
Hartford, CT 06106 ■

Eagle Observation Area

The Shepaug Bald Eagle Observation Area will open to the public for its sixth consecutive winter season on Wednesday, December 26th. **The observation area will be open three days a week, Saturdays, Sundays and Wednesdays, from 9 A.M. to 1 P.M., December 26, 1990, through March 24, 1991.**

The Shepaug Bald Eagle Observation Area in Southbury is cooperatively operated by the D.E.P. and Northeast Utilities. Since 1985, when it opened, the observation area has had over 26,000 visitors.

Individuals and groups wishing to visit the site must make a reservation for a particular date, as there will be a limited number of visitors are allowed per open day.

Reservations may be made Monday through Friday, from 8:30 A.M. to 3:30 P.M., by calling the SPECIAL PROGRAM RESERVATION NUMBER: (203)566-7195. Only *one* reservation may be made per phone call. Groups may reserve any open date on the calendar; individual reservations will be accepted according to the following timetable: November 23-December 28, dates in December; December 10-January 25, dates in January; January 21-February 22, dates in February; February 18-March 22, dates in March.

The reservation system was implemented several winters ago, to ensure the welfare of the wintering bald eagles using the area. ■

Give a Gift of Wildlife

The Department of Environmental Protection's (D.E.P.) Wildlife Division is offering several interesting holiday gift suggestions.

The 40-page booklet *"Discover Wildlife in Connecticut's Backyard"* is a guide for making backyards more attractive to wildlife. It contains information on landscaping and nest boxes, as well as recommendations on the best winter foods and feeding strategies for a variety of species.

Accompanying the guide is a colorful poster entitled "Winter Picnics Are for the Birds." Reproduced from an original watercolor by Connecticut artist Chris Rowlands, it depicts 11 of Connecticut's winter songbirds visiting a backyard feeder. Also included is a checklist of Connecticut's 429 wildlife species. This set is available for just $5.00.

To obtain the backyard wildlife guide, checklist and poster, send a $5.00 check or money order, payable to the Connecticut DEP Nonharvested Wildlife Fund, to: Discover Connecticut's Wildlife, P.O. Box 1238, Burlington, CT 06013. Please specify when ordering as a gift so a gift card can be sent to the recipient.

All proceeds benefit Connecticut's endangered and threatened species, songbirds and other nongame wildlife species. ■

Drawing by Susan Carsten

A new Connecticut 5-Year Deer Program Summary, 1985-1989, *by deer program biologists Mark Ellingwood and Jim Spignesi, is available from DEP's Wildlife Division. Request them from the Franklin Wildlife Management Area, 391 Route 32, North Franklin, CT 06254; (203) 642-7239.*

The Night Sky

The Christmas Star

by

Francine Jackson

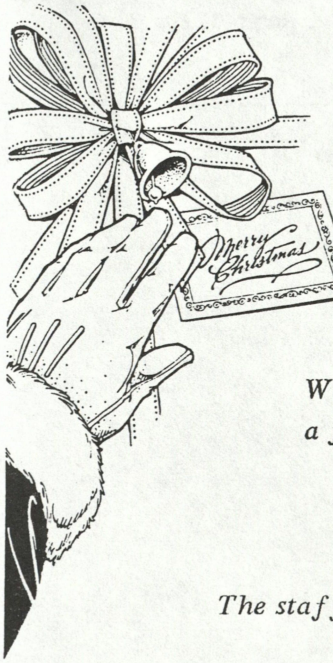
Every year at this time, when thoughts turn to the holidays, invariably some people wonder about the Star of Bethlehem. Then, after I've either written or spoken about its possibilities, inevitably someone else will either (a) claim that it was a miracle, and any thoughts on it should be left alone, or (b) ask who cares about an apparently insignificant event that occurred almost two millenia ago.

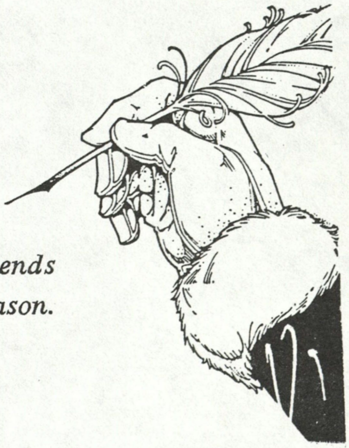
To respond to the second statement first, we people are imbued with a natural curiosity about the world around us, and if several men who studied the night sky say they followed a "star" to a particular destination, then there are others who will want to know what that "star" could have been.

The Star of Bethlehem, as it is known, allegedly led the Wise Men to the stable in Bethlehem. Because these men were reputed to be exceedingly familiar with the night sky, their allusion to a star cannot be ignored. But, unfortunately, they never gave us any inkling as to what it is they supposedly followed. Today, we can discount some possibilities, such as meteors and comets, but there were some stellar occurrences that to someone looking for something unique in the sky could have been interpreted as "signs." The one most often touted as the most possible candidate for the Star of Bethlehem – the passing by or conjunction of the planet Jupiter with the bright star Regulus, then the apparent joining of Jupiter with the planet Venus, creating a brilliant "starry" light – seems to best both date the birth and be a celestial phenomenon that would be evident to people who expected something to happen. It is not something the average person would have readily noticed.

To respond to people who insist the Star of Bethlehem was a miraculous event, perhaps it was. But if a person wants to attempt to physically explain a written statement, then certainly he should be allowed to try. And that's what we do every December.

Happy holidays.





We wish all our friends
a joyous holiday season.

The staff of Connecticut Environment

Endnote

"Nature is man's healer, because nature is man . . . By bathing us in the moon, the sun, and the sea, Nature fashioned the bodies we inhabit. These were the ingredients that provided us each with our piece of Nature – a shelter, life-support system, intimate companion, and home for seven decades or more."

Deepak Chopra

Connecticut Environment for Christmas

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